

DOCUMENT RESUME

ED 060 053

TM 001 139

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 TITLE Cross-Cultural Comparisons of the Motivation of Young Children to Achieve in School.
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 SPONS AGENCY Office of Education (DHEW), Washington, D.C.
 PUB DATE Jul 71
 GRANT OEG-B89-4576; OEG-CG-9929
 NOTE 9p.: Paper presented at the XVth International Congress of Applied Psychology, Liege, Belgium, July 1971

EDRS PRICE MF-\$0.65 HC-\$3.29
 DESCRIPTORS Achievement Need; Analysis of Variance; Correlation; *Cross Cultural Studies; Cultural Differences; *Economically Disadvantaged; Factor Analysis; *Learning Motivation; Objective Tests; Personality Assessment; *Preschool Children; Projective Tests; Religious Differences; Response Style (Tests); *School Attitudes; Self Concept; Self Evaluation; Sex Differences
 IDENTIFIERS *Gumpgookies

ABSTRACT

Research on the differences in motivation to achieve in school among 10 groups of four-year-olds utilized a new, 75-item objective projective test called Gumpgookies. This test was individually administered to approximately 2000 children mainly from low economic backgrounds. The various ethnic and religious groups were compared with respect to exact scores on five factors: 1) Instrumental Activity; 2) School Enjoyment; 3) Self-Confidence; 4) Purposiveness; and 5) Self-Evaluation. A series of fixed effects analyses of variance showed significant differences among groups on total score and on all factors except Purposiveness. Significant differences were associated with sex for the School Enjoyment factor. (Author/MS)

CROSS-CULTURAL COMPARISONS OF THE
MOTIVATION OF YOUNG CHILDREN TO ACHIEVE IN SCHOOL

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Summary

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The research presented has to do with differences among 10 groups of four-year-olds on a new test of motivation to achieve in school, Gumpgookies (Bonnie L. Ballif and Dorothy C. Adkins). This is an objective-projective test containing 75 items. Each item presents two illustrations of amoeba-like creatures called Gumpgookies, and the examiner describes what each one is doing or what it likes. The child is to select the one with which he more closely identifies. For children below six years of age, the test is given individually and takes about 15 minutes.

It was soon discovered that response sets associated with positions of the answers and with their order of presentation were confounding results. Hence a factor analytic procedure whereby such effects were partialled out of the item intercorrelation matrix was devised. The resulting factors have zero correlations with response set scores.

TM 001 139

The aim was to give the test to 200 cases representing each of several low-income groups that could be identified rather clearly as follows: White, Black, American-Indian, Puerto Rican (in New York City), Oriental (on the west coast of the United States), Mexican-American (in Texas), and Hawaiians. To these seven groups were added Catholics, Jews, and Mormons. Unfortunately for purposes of this study, it was impossible to locate sufficient numbers of children from these distinct religious backgrounds who at the same time were from homes of low economic level.

Nevertheless, about 200 children in each of these groups were studied. It was also impossible to control completely for whether the environments were predominantly rural or urban, partly because of budgetary limitations.

Despite the obvious problems of interpretation of the data, the groups are compared with respect to exact scores on five factors that agree reasonably well with the hypothesized constituents of motivation to achieve in school: (1) Instrumental Activity, (2) School Enjoyment, (3) Self-Confidence, (4) Purposiveness, and (5) Self-Evaluation. A series of fixed effects analyses of variance showed significant differences among groups on total score and on all factors except Purposiveness. Significant differences were associated with sex for the School Enjoyment factor, a not unexpected finding.

A summary of the many other types of analyses that were applied is briefly presented.

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The confines of a brief paper will not allow presentation of the tremendous amount of data that have been collected at the University of Hawaii on young children's motivation to achieve in school. Hence, although some results and conclusions can be mentioned, perhaps this paper can be most useful as a case study illustrating kinds of problems likely to be encountered in cross-cultural research on personality.

Historically, attempts to measure motivation to achieve have been dominated by the projective approach of McClelland and Atkinson, through thematic apperception testing. This time-honored technique did not seem likely to be useful in testing very young children, especially those from economically poor homes. Hence at the University of Hawaii, when it was desired to test the motivation to achieve in school of four-year-old children in the course of evaluating preschool educational programs in different cultural milieus, a new test called Gumpgookies was devised. This is an objective-projective test, which, for children below the age of six, is administered individually. The child is told that there are

* A paper presented at the XVIIth International Congress of Applied Psychology, Liege, Belgium, July 25-30, 1971.

** The author is indebted to several colleagues. Dr. Bonnie Ballif of Fordham University is co-author of the test used and served as co-investigator in the initial phases of this study. Dr. Renato Espinosa has served as Assistant Chief of the Center that conducted the study. Dr. Frank Payne developed the needed age norms and also programmed and interpreted the analysis of variance among group means. Dr. Paul Horst has provided invaluable consultation in the development of the factor analysis techniques employed. Mr. Robert Bloedon has worked out the machine programming. Many other staff members have assisted in the collection and analysis of the data.

little creatures called gumpgookies and that each person has his own, which likes what he likes and does what he does. With a view to keeping the task simple, each item consisted of a pictorial presentation of two gumpgookies--rather amorphous, amoeba-like creatures--and a brief description of each. For example: "This gumpgookie likes to learn to count. This one would rather watch."

In the first version of the test, the two illustrations for each item were presented side by side, and first the left-hand and then the right-hand one were described by the examiner. It was discovered, however, in one of the early analyses, that items with the highest correlations with the total score tended to have answers in the right-hand rather than in the left-hand position. Even though these positions of the selected answers were then equated and randomly distributed, so that there could be no systematic effect on total scores, the answer positions were soon found to affect composition of components of the test identified through factor analysis. Hence the interpretation of the factors seemed difficult if not impossible.

Moreover, it was realized that a fairly reliable tendency of some children, in the face of uncertainty, to choose the right-hand or the left-hand answer was inextricably interwoven with possible tendencies to take the first choice or the second choice presented.

In an effort to dispel or negate the effects of such answer position and primacy-recency influences, a new form of the test was devised in which some items were presented with one figure below the other or with the two shown in opposite corners of a page. In addition, the order in which the examiner described the figures was randomized. This new form of the test contained 75 items, gleaned from an original 200 following minor revisions in wording. This is the form involved in the studies to be described.

The aim was to have the test given to at least 200 children in each of several distinct ethnic-cultural groups. The plan was that all groups would be selected from Head Start classes, so that effects of differences in economic background would be minimal. In addition, there was particular interest in learning whether children from different religious backgrounds would differ on the test. It had at first been naively supposed that a sufficient number of such children could be found in Head Start classes. This, alas, turned out not to be possible. Nevertheless, the study did eventually include separate groups of Catholics, Jews, and Mormons, with recognition that they came from predominantly middle-class American homes.

The other groups tested were Mexican-Americans in Texas, American-Indians on reservations in Oregon and Montana, Blacks from Los Angeles, Puerto-Rican Americans from New York, Hawaiians--and it is virtually impossible to specify more exactly their ethnic background without pedigree research on each child--, a small group of White Americans from rural Oregon, and another small group of children of Oriental extraction living in cities on the west coast of the United States of America.

In retrospect, the sampling was poor, even naive in some respects. It was dictated primarily by budgetary constraints, which made impossible a census of all four-year-olds and then selection of and testing of a stratified random sample on relevant dimensions--economic status of family, rural or urban background, religious background, and gross indications of ethnicity. In particular, it proved to be impossible to get tested a sample of 200 children of Oriental extraction in the two major cities on the west coast, even though there are a large number of such children. Moreover, with hindsight, there probably should have been an attempt to separate children of Chinese from those of Japanese extraction and to

exclude those of mixed Oriental extraction, since there probably are motivational differences that only obfuscate results. The sample of children of Oriental background is too small to warrant definite conclusions in any case.

The plan had been to include samples from some Pacific island cultures in which observation had led to the conclusion that motivation to achieve may differ from that of the North American culture. It has been reported, for example, that children in one of these cultures will not try to do the best that they can because all children are to be alike, and that team games in another island culture inevitably end in tied scores because one group is not supposed to excel another. A commitment to give the test in one such location was reversed when key adults saw the test and surmised, probably correctly, that their children would show up unfavorably. Efforts to get results on additional samples were suspended, awaiting solutions for other problems, particularly those associated with response sets.

To return to the test--it was based upon five hypothesized constituents of motivation to achieve in school: (1) affective--or School Enjoyment; (2) cognitive--or Instrumental Activity, knowing what steps to take in order to achieve; (3) Self-Confidence; (4) Purposiveness--being able to formulate future purposes; and (5) evaluative--or Self-Evaluation of one's progress toward goals. Hence the natural approach to study of the test has been factor analysis of the item intercorrelations--for separate groups, combinations of groups, and the total group, as well as for different numbers of factors and different rotational methods. Reams of tables could be presented, and countless more reams of attempts to interpret them. After many such sorties, often terminating in cul de sacs, a solution to the response-set problem mentioned earlier was found through the technical assistance of Dr. Paul Horst. This methodological break-through yields

exact factor scores that correlate exactly zero with response-set scores. And, incidentally, such response sets must have affected results of tests in the cognitive domain, when they are given to young children, to a much greater extent than has been explicitly realized.

The item difficulty values for each of 10 groups were correlated and factored. The three factors were, in order of loadings, (1) Mormon, Catholic, Jewish, Puerto Rican, Black (urban), and White (rural); (2) Oriental, Mexican-American, American-Indian; and (3) Hawaiian. The item-test correlation coefficients for the 10 groups were factored. The three factors, in order of loadings, were (1) Jewish, Mormon, Catholic, White (rural); (2) Mexican-American, Puerto-Rican, and American-Indian; (3) Oriental, Black (urban), Hawaiian. In both analyses the Mormon, Catholic, Jewish, and White samples fall together, as do the Mexican-American and American-Indian samples. Probably economic background and language influences are affecting results.

The item intercorrelations for both the total group and each separate group were factored to solutions with varying numbers of factors, from three to eight, both without and with the new method of removing effects of response sets. Time does not permit presentation of all details, but a concise summary will be given.

1. In general, the hypothesized factors were confirmed for the total group, the clearest identifications being for Instrumental Activity, School Enjoyment, Self-Evaluation, and Self-Confidence. More items appear to be needed to tap Purposiveness.

2. Total scores and factor scores, correlating zero with response sets, were computed and translated to age norms based on an age interval of one month for the total sample of 1588 cases. The largest group differences were on total score and Self-Evaluation.

a. On total score, Mormons, Jews, and Catholics were high; Whites, Blacks, Puerto Ricans average, Orientals, American-Indians, Hawaiians, and Mexican-Americans low.

b. On Instrumental Activity, Catholics, Puerto Ricans, Jews and Mormons were above average, the others below.

c. On School Enjoyment, Mormons, Blacks, Orientals, and Jews were above average, the rest below.

d. On Self-Evaluation, the factor in which the largest differences in means were evident, Mormons were clearly highest, followed by Jews and Catholics. Blacks, Whites, and Puerto Ricans were near average, and American-Indians, Hawaiians, Mexican-Americans, and Orientals were low.

e. On Self-Confidence, Jews were high, followed by Whites and Catholics. About average were Puerto Ricans, American-Indians, and Orientals. Lowest were Hawaiians, Blacks, and Mexican-Americans.

f. The Purposiveness factor was not very well identified, and differences were not great. The Mormons, highest, were followed by the Hawaiians, Whites, Jews, and Catholics; then by the Orientals, Mexican-Americans, Blacks, and Puerto-Ricans; and finally by the American-Indians.

A series of fixed effects analyses of variance by an unweighted means solution showed significant differences among groups on total score and on all factors except Purposiveness. The analyses also included sex. Significant differences associated with sex were found only for the factor of School Enjoyment, and even this difference did not hold for the small samples of White-Rural and Oriental (West Coast) samples. Nevertheless, in the American culture young girls seem to have a better adjustment than do boys to the demands of school.

Attempts to identify and interpret factors for the 10 subgroups have been made, both before and after the solution that eliminates effects of response sets became available. Doubtless there are different strengths of factors as well as of tendencies to response sets among the different groups. However, the investigators have by now become convinced that for this kind of data on young children very large numbers of cases are necessary. Indeed, essays directed towards testing factor stability across half samples to total sample suggest N's in the neighborhood of 2,000. Hence conjectures based upon the available smaller samples are not presented here.

In other attempts to compare the factorial structures across groups, detailed tabulations of the items with high loadings on each of five factors for each group have been made. This tedious task is confounded by the strong probability that the factorial structures indeed may vary among the groups as well as by the relative instability of factors based upon 200 cases or fewer. Nevertheless, each of these solutions has been compared with that for the total of all the groups, and the factor loadings have been correlated with each other, although this procedure is rather questionable. In addition, a five-factor analysis was made of the item intercorrelation matrix augmented by dichotomous variables reflecting group membership--Catholic versus non-Catholic, etc. In general, results of this approach were consistent with what had been learned from analyses of variance of group means.

This paper clearly poses more questions than it answers. Reports on some of the many analyses that have been conducted can be made available to interested persons upon request.